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IMPLEMENTATION PLAN REVIEW FOR VERMONT AS REQUIRED BY THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

TRW/Environmental Services

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IMPLEMENTATION PLAN REVIEW

FOR

VERMONT

AS REQUIRED

BY

THE ENERGY SUPPLY

AND

ENVIRONMENTAL COORDINATION ACT

U. S. ENVIRONMENTAL PROTECTION AGENCY

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16. ABSTRACT

Section IV of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interferring with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section IV of ESECA, is EPA's report to the State indicating where regulations might be revised.

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IMPLEMENTATION PLAN REVIEW

FOR

VERMONT

AS REQUIRED BY THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

PREPARED BY THE FOLLOWING TASK FORCE:

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Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

April 1975

VERMONT

ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT
(SECTION IV - STATE IMPLEMENTATION PLAN REVIEW)

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1.0 EXECUTIVE SUMMARY

The enclosed report is the U.S. Environmental Protection Agency's (EPA) response to Section IV of the Energy Supply and Environmental Coordination Act of 1974 (ESECA). Section IV requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). In addition to requiring that EPA report to the State on whether control regulations might be revised, ESECA provides that EPA must approve or disapprove any revised regulations relating to fuel burning stationary sources within three months after they are submitted to EPA by the States. The States may, as in the Clean Air Act of 1970, initiate State Implementation Plan revisions; ESECA does not, however, require States to change any existing plan.

Congress has intended that this report provide the State with information on excessively restrictive control regulations. The intent of ESECA is that SIP's, wherever possible, be revised in the interest of conserving low sulfur fuels or converting sources which burn oil or natural gas to coal. EPA's objective in carrying out the SIP reviews, therefore, has been to try to establish if emissions from combustion sources may be increased. Where an indication can be found that emissions from certain fuel burning sources can be increased and still attain and maintain NAAQS, it may be plausible that fuel resource allocations can be altered for "clean fuel savings" in a manner consistent with both environmental and national energy needs.

In many respects, the ESECA SIP reviews parallel EPA's policy on clean fuels. The Clean Fuels Policy has consisted of reviewing implementation plans with regards to saving low sulfur fuels and, where the primary sulfur dioxide air quality standards were not exceeded, to encourage States to either defer compliance regulations or to revise the SO_2 emission regulations. The States have also been asked to discourage large scale shifts from coal to oil where this could be done without jeopardizing the attainment and maintenance of the NAAQS.

To date, EPA's fuels policy has addressed only those States with the largest clean fuels saving potential. Several of these States have or are currently in the process of revising SO_2 regulations. These States are generally in the Eastern half of the United States. ESECA, however, extends the analysis of potentially over-restrictive regulations to all 55 States and territories. In addition, the current reviews address the attainment and maintenance of all the National Ambient Air Quality Standards.

There are, in general, three predominant reasons for the existence of overly restrictive emission limitations within the State Implementation Plans. These are (1) The use of the example region approach in developing State-wide air quality control strategies; (2) the existence of State Air Quality Standards which are more stringent than NAAQS; and (3) the "hot spots" in only part of an Air Quality Control Region (AQCR) which have been used as the basis for controlling the entire region. Since each of these situations affect many State plans and in some instances conflict with current national energy concerns, a review of the State Implementation Plans is a logical follow-up to EPA's initial appraisal of the SIP's conducted in 1972. At that time SIP's were approved by EPA if they demonstrated the attainment of NAAQS or more stringent state air quality standards. Also, at that time an acceptable method for formulating control strategies was the use of an example region for demonstrating the attainment of the standards.

The example region concept permitted a State to identify the most polluted air quality control region (AQCR) and adopt control regulations which would be adequate to attain the NAAQS in that region. In using an example region, it was assumed that NAAQS would be attained in the other AQCR's of the State if the control regulations were applied to similar sources. The problem with the use of an example region is that it can result in excessive controls, especially in the utilization of clean fuels, for areas of the State where sources would not otherwise contribute to NAAQS violations. For instance, a control strategy based on a particular region or source can result in a regulation requiring 1 percent sulfur oil to be burned state-wide where the use of 3 percent sulfur coal would be adequate to attain NAAQS in some locations.

EPA anticipates that a number of States will use the review findings to assist them in making the decision whether or not to revise portions of their State Implementation Plans. However, it is most important for those States which desire to submit a revised plan to recognize the review's limitations. The findings of this report are by no means conclusive and are neither intended nor adequate to be the sole basis for SIP revisions; they do, however, represent EPA's best judgment and effort in complying with the ESECA requirements. The time and resources which EPA has had to prepare the reports has not permitted the consideration of growth, economics, and control strategy tradeoffs. Also, there have been only limited dispersion modeling data available by which to address individual point source emissions. Where the modeling data for specific sources were found, however, they were used in the analysis.

The data upon which the reports' findings are based are the most currently available to the Federal Government. However, EPA believes that the States possess the best information for developing revised plans. The States have the most up-to-date air quality and emissions data, a better feel for growth, and the fullest understanding for the complex problems facing them in the attainment and maintenance of air quality. Therefore, those States desiring to revise a plan are encouraged to verify and, in many instances, expand the modeling and monitoring data supporting EPA's findings. In developing a suitable plan, it is suggested that States select control strategies which place emissions for fuel combustion sources into perspective with all sources of emissions such as smelters or other industrial processes. States are encouraged to consider the overall impact which the potential relaxation of overly restrictive emissions regulations for combustion sources might have on their future control programs. This may include air quality maintenance, prevention of significant deterioration, increased TSP, NO_x, and HC emissions which occur in fuel switching, and other potential air pollution situations such as sulfates.

Although the enclosed analysis has attempted to address the attainment of all the NAAQS, most of the review has focused on total suspended particulate matter (TSP) and sulfur dioxide (SO_2) emissions. This is because stationary fuel combustion sources constitute the greatest source of SO_2 emissions and are a major source of TSP emissions.

Part of each State's review was organized to provide an analysis of the SO_2 and TSP emission tolerances within each of the various AQCR's. The regional emission tolerance estimate is, in many cases, EPA's only measure of the "over-cleaning" accomplished by a SIP. The tolerance assessments have been combined in Section 2 and Appendix B with other regional air quality "indicators" in an attempt to provide an evaluation of a region's candidacy for changing emission limitation regulations. In conjunction with the regional analysis, a summary of the State's fuel combustion sources (power plants, industrial sources, and area sources) has been carried out in Appendices C, D, and E.

The State of Vermont's State Implementation Plan has been reviewed for the most prevalent causes of over-restrictive fuel combustion emission limiting regulations. The major findings of the review are:

FOR TOTAL SUSPENDED PARTICULATES, THERE ARE NO AQCR'S WHICH INDICATE ANY POTENTIAL FOR REVISING FUEL COMBUSTION SOURCE EMISSION LIMITING REGULATIONS

FOR SO_2, THE CHAMPLAIN VALLEY INTERSTATE AQCR IS RATED AS A POOR CANDIDATE FOR REVISING EMISSION REGULATIONS, WHILE THE VERMONT INTRASTATE AQCR IS RATED MARGINAL FOR REGULATION REVISION.

The supportive findings of the SIP review are as follows:

National Ambient Air Quality Standards for total suspended particulates were exceeded in both of the Vermont AQCRs during 1973.

Sulfur dioxide levels during 1973 did not exceed standards in either of the two AQCRs. However in 1974, the 24-hour standard was exceeded in the Champlain Valley Interstate AQCR.

More air quality data for sulfur dioxide are needed in the Vermont Intrastate AQCR as there was only one monitoring station reporting data for 1973. It is possible that additional clean fuel savings could be realized in this region, if more was known about the air quality status.

2.0 STATE IMPLEMENTATION PLAN REVIEW

2.1 SUMMARY

A revision of fuel combustion source emissions regulations will depend on many factors. For example:

- Does the State have air quality standards which are more stringent than NAAQS?
- Does the State have emission limitation regulations for control of (1) power plants, (2) industrial sources, (3) area sources?
- Did the State use an example region approach for demonstrating the attainment of NAAQS or more stringent State standards.
- Has the State not initiated action to modify combustion source emission regulations for fuel savings; i.e., under the Clean Fuels Policy?
- Are there no proposed Air Quality Maintenance Areas?
- Are there indications of a sufficient number of monitoring sites within a region?
- Is there an expected 1975 attainment date for NAAQS?
- Based on (1973) air quality data, are there no reported violations of NAAQS?
- Based on (1973) air quality data, are there indications of a tolerance for increasing emissions?
- Are the total emissions from stationary fuel combustion sources proportionally lower than those of other sources?
- Is there a significant clean fuels savings potential in the region?
- Do modeling results for specific fuel combustion sources show a potential for a regulation revision?

The following portion of this report is directed at answering these questions. An AQCR's potential for revising regulations increases when there are affirmative responses to the above.

The initial part of the SIP review report, Section 2 and Appendix A, was organized to provide the background and current situation information for the State Implementation Plan. Section 3 and the remaining Appendices

provide an AQCR analysis which helps establish the overall potential for revising regulations. Emission tolerance estimates have been combined in Appendix B with other regional air quality "indicators" in an attempt to provide an evaluation of a region's candidacy for revising emission limiting regulations. In conjunction with the regional analysis, a characterization of the State's fuel combustion sources (power plants, industrial sources, and area sources) has been carried out in Appendices C, D, E.

Based on an overall evaluation of EPA's current information, AQCR's have been classified as good, marginal, or poor candidates for regulation revisions. Table 2-1 summarizes the State Implementation Plan Review. The remaining portion of the report supports this summary with explanations.

The main factor in determining the candidacy for regulation revision is the air quality status. Any AQCR which has an air quality violation is automatically given a poor rating. On the other hand, a region with no air quality violations, no AQMA designations, low to moderate emissions, along with a small percentage of emissions from fuel combustion sources, would receive a good rating. Those AQCR's that have varying indicators would need further evaluation and would be given a marginal rating.

TABLE 2-1

STATE IMPLEMENTATION PLAN REVIEW
(SUMMARY)

"Indicators"	State		Champlain Valley AQCR 159		Vermont AQCR 221	
	TSP	SO_2	TSP	SO_2	TSP	SO_2
• Does the State have air quality standards which are more stringent than NAAQS?	Yes	Yes				
• Does the State have emission limiting regulations for control of:						
1. Power plants	Yes	Yes				
2. Industrial sources	Yes	Yes				
3. Area sources	Yes	Yes				
• Did the State use an example region approach for demonstrating the attainment of NAAQS or more stringent State standards?	Yes	Yes				
• Has the State <u>not</u> initiated action to modify combustion source emission regulations for fuel savings; i.e., under the Clean Fuels Policy?	No	No				
• Are there <u>no</u> proposed Air Quality Maintenance Areas?			Yes	Yes	Yes	Yes
• Are there indications of a sufficient number of monitoring sites within a region?			Yes	Yes	Yes	No
• Is there an expected 1975 attainment date for NAAQS?			Yes	Yes	Yes	Yes
• Based on (1973) Air Quality Data, are there no reported violations of NAAQS?			No	No[a]	No	Yes
• Based on (1973) Air Quality Data, are there indications of a tolerance for increasing emissions?			No	No	No	Yes
• Are the total emissions from stationary fuel combustion sources proportionally lower than those of other sources?			Yes	Yes	Yes	No
• Do modeling results for specific fuel combustion sources show a potential for a regulation revision?			N.A.	N.A.	N.A.	N.A.
• Based on the above indicators, what is the potential for revising fuel combustion source emission limiting regulations?			Poor	Poor	Poor	Marg.
• Is there a significant Clean Fuels Saving potential in the region?			No		Yes	

[a] Violation occurred in 1974.

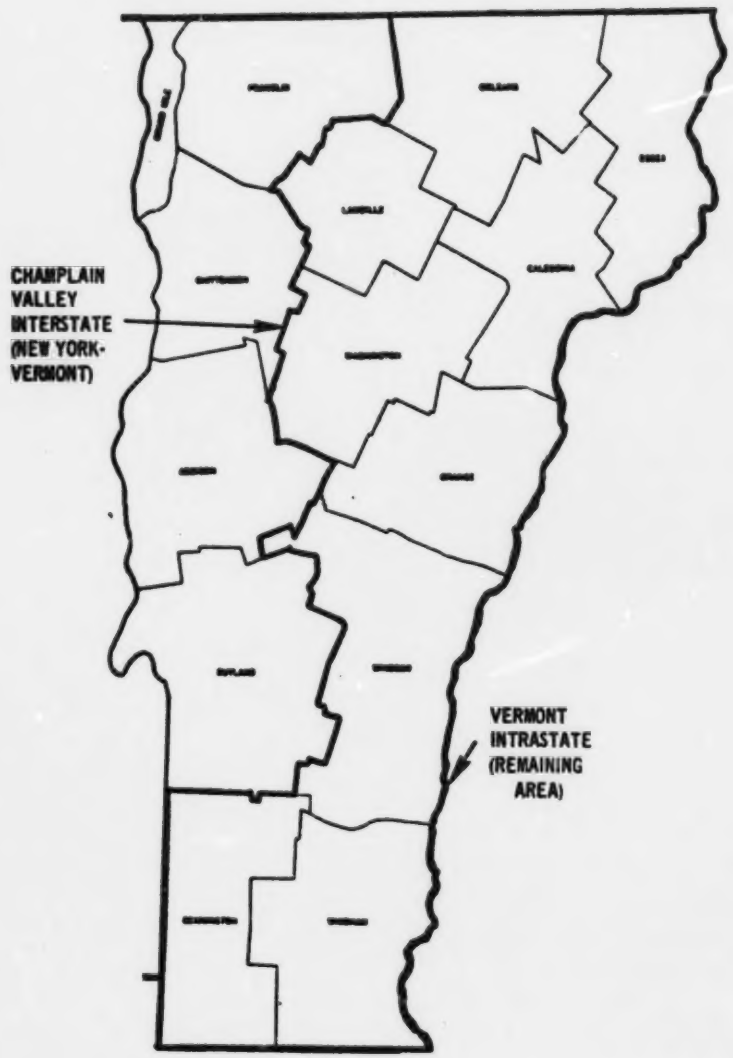

Figure 2-1 Vermont Air Quality Control Regions

2.2 AIR QUALITY SETTING -- STATE OF VERMONT

The State of Vermont is divided into two AQCR's. These are AQCR 159, Champlain Valley Interstate AQCR (Vermont and New York) and containing the counties of Addison, Chittenden, Franklin, Grand Isle and Rutland in Vermont; and AQCR 221, Vermont Intrastate AQCR containing the remaining counties in the State of Vermont.

A summary of the Federal and Vermont air quality standards for particulate, SO_2 and NO_2 are presented in Table A-3. It should be noted that the standards adopted by the State of Vermont are more stringent than the respective Federal standards in all cases except NO_2, where none were adopted.

Air quality data for 1973 are summarized in Tables A-4 and A-5 for suspended particulates and sulfur dioxide respectively. These data are from the SAROAD data bank as of July, 1974.

During 1973, the National Ambient Air Quality Standards were exceeded in the Champlain Valley Interstate AQCR for total suspended particulates. Sulfur dioxide levels in this AQCR did not exceed standards in 1973 but did in 1974.

In the Vermont Intrastate AQCR, ambient levels of suspended particulates exceeded Federal standards during 1973. There were no violations of the sulfur dioxide standards.

2.3 BACKGROUND ON THE DEVELOPMENT OF THE CURRENT STATE IMPLEMENTATION PLAN

The State of Vermont Implementation Plan contains control strategies and regulations for both particulate and sulfur dioxide emissions which will be adequate to attain National Ambient Air Quality Standards. EPA did not have to promulgate any regulations for the State of Vermont.

The State regulations for the control of particulate matter include emission restrictions on fuel burning equipment. The regulation is variable depending on the heat input of the equipment, and whether the equipment is

new or existing. Regulations limit visible emissions from existing facilities to Ringelmann No. 2, except for 6 minutes in any hour which may be as high as Ringelmann 3. New facilities are limited to Ringelmann No. 1, except that 6 minutes in any hour may be as high as No. 3.

On September 10, 1974, the Vermont Agency of Environmental Conservation held a public hearing concerning proposed revisions of the State's regulations concerning air pollution control. One of the proposed revisions was a change in the allowable particulate emission for fuel burning equipment rated over 1000 million BTU/hour heat input from 0.02 to 0.06 pounds per hour per million BTU heat input. This revision has been adopted by the State of Vermont, but has not been submitted to EPA for approval as yet.

3.0 AQCR ASSESSMENTS BASED ON SIP REVIEWS

The purpose of this section is to evaluate the available information for the State of Vermont and determine the feasibility of revisions to the SIP which would result in clean fuel conservation. The assessments will be made by AQCR addressing each type of fuel combustion source: power plants, large industrial and commercial/institutional sources, and area sources. The assessments must be made for each pollutant separately and are made on the basis of seven criteria: (1) 1973 air quality violations; (2) expected NAAQS attainment dates; (3) proposed Air Quality Maintenance Area (AQMA) designations; (4) total emissions; (5) portion of emissions from Vermont fuel combustion sources; (6) regional tolerance for emissions increase; and (7) pollutant priority classifications. Tables B-1 and B-2 tabulate these criteria for each AQCR for TSP and SO_2, respectively.

The AQCR's are grouped into good, marginal, and poor candidates for regulation relaxation based on the evaluation of all the presented information. Using available data, any AQCR which displays a 1973 air quality violation would probably be given a poor ranking. Conversely, a region with no violations, no proposed AQMA designations, low to moderate emissions, a positive emission tolerance, and/or a small fraction of emissions from Vermont fuel combustion sources would receive a good ranking. All other regions with varying indicators or incomplete or missing data would be evaluated separately and grouped in the appropriate class, most likely a marginal ranking.

The source type groups are evaluated separately using such variables for criteria as modeling results, emissions data from the SIP and/or NEDS, and air quality data.

3.1 CHAMPLAIN VALLEY INTERSTATE AQCR 159

3.1.1 Regional Air Quality Assessment

Air quality monitoring in 1973 in the Champlain Valley Interstate AQCR indicated a reduction in TSP will be required to meet the standards. As indicated by other factors in Table B-1, a poor candidate ranking for possible TSP emission regulation relaxation was assigned.

This AQCR is also ranked as a poor candidate for modification of SO_2 regulations because of an air quality violation which occurred during 1974. Another factor is the high percentage of emissions from Vermont fuel combustion sources. (Table A-G)

3.1.2 Power Plant Assessment

Located in the Vermont portion of this AQCR is one 70 megawatt power plant at Burlington. This plant burns 0.98 percent sulfur bituminous coal in three boilers and 0.45 percent sulfur distillate oil in two gas turbines. These turbines have a combined generating capacity of 40 megawatts. No modeling data are available for the plant, and, therefore, it is very difficult to evaluate the impact of increased emissions on the local air quality. It is recommended that modeling be accomplished and the results analyzed prior to any decision to increase emissions. Located at Milton, is a very small power plant of 4 megawatts burning 1.48 percent sulfur residual oil in two boilers and using 0.30 percent sulfur distillate oil for purging. As indicated in Table C-1, power plant sub-stations with diesel generators and gas turbines are included, however, no operating capacity information is available. The plants located at St. Albans, Vergennes and Essex Junction use 0.20 to 0.23 percent sulfur distillate oil for their diesel generators, and also included at the Essex Junction station are two boilers which burn the same distillate oil. Gas turbines using 0.20 percent sulfur distillate oil are located at Rutland and Colchester.

3.1.3 Industrial and Commercial/Institutional Source Assessment

There are no significant fuel combustion particulate sources, and five SO_2 sources in this category. They contribute five percent of the Vermont portion of the particulate emissions, and one-fifth of the SO_2. Since both particulate and sulfur dioxide standards were exceeded in this region, there is little potential for allowing an increase in emissions for these sources.

3.1.4 Area Source Assessment

Area sources account for about 24 percent of the region's TSP emissions and 78 percent of the SO_2 emissions. As with the industrial sources, there is no apparent tolerance to increase TSP or SO_2 emissions.

3.2 VERMONT INTRASTATE - AQCR 221

3.2.1 Regional Air Quality Assessment

This region received a poor rating for particulate and a marginal rating for SO_2 regulation modification. The poor rating for particulates was based primarily on the violation of air quality standards and no tolerance for emission increase. In the case of SO_2, it was rated marginal since there was only one monitoring site providing air quality data. There were no violations at this site during 1973.

3.2.2 Power Plant Assessment

There are no power plants located in this AQCR. However, there is one small power substation located in Ascutney. This is a gas turbine burning 0.17 percent sulfur distillate oil.

3.2.3 Industrial and Commercial/Institutional Source Assessment

Emissions from significant sources in this category comprise about one-fifth of the regional particulate and about one-third of SO_2 emissions. Although, there are only two particulate significant source emitters in this region, any relaxation of fuel combustion emission limiting regulations would increase emissions in an already critical area. As stated in Section 3.2.1 for SO_2, again, no detailed assessment of the regulation modification potential can be made at this time due to limited air quality data.

3.2.4 Area Source Assessment

Area sources account for about 10 percent of the region's TSP emissions and 60 percent of the SO_2 emissions. As with the industrial sources, there is no apparent tolerance to increase emissions for TSP. SO_2 in this category is the same as that explained in Section 3.2.1.

APPENDIX A

STATE IMPLEMENTATION PLAN BACKGROUND

TABLE A-1

VERMONT AQCR PRIORITY CLASSIFICATION AND AQMA'S

AQCR Name	Federal Number	AQCR Priority Classification[a]		Population 1975[b]	Proposed AQMA Designations	
		Part	SO_x		TSP Counties	SO_x Counties
Champlain Valley	159[c]	II	II	615,000	None	None
Vermont (Remainder)	221	II	II	253,000	None	None

[a] Criteria based on maximum (or estimated) pollution concentration in area:

Priority	I	II	III
Sulfur oxide:	Greater than $\mu g/m^3$	From - To $\mu g/m^3$	Less Than $\mu g/m^3$
Annual arithmetic mean	100	60-100	60
24 - hour maximum	455	260-455	260
Particulate matter:			
Annual geometric mean	95	60-95	60
24 - hour maximum	325	150-325	150

[b] "Projections of Economic Activity for Air Quality Control Regions," U.S. Department of Commerce, Bureau of Economic Analysis, August 1973

[c] Interstate region

TABLE A-2 ATTAINMENT DATES

AQCR Name	AQCR No.	TSP Attainment Dates		SO_2 Attainment Dates	
		Primary	Secondary	Primary	Secondary
Champlain Valley	159[a]	7/75	7/75	7/75	7/75
Vermont (Remainder)	221	7/75	7/75	7/75	7/75

[a] Interstate region

TABLE A-3 VERMONT AMBIENT AIR QUALITY STANDARDS

All concentrations in $\mu gms/m^3$

		Total Suspended Particulate		Sulfur Oxides				Nitrogen Dioxide
		Annual	24-Hour	Annual	24-Hour	3-Hour	1-Hour	Annual
Federal (Nov. 1972)	Primary	75(G)	260[a]	80(A)	365[a]	---	---	100(A)
	Secondary	60(G)	150[a]	---	--	1300[a]	---	100(A)
State		45(G)	125[a]	57(A)	150[a]	---	285[a]	----

[a] Not to be exceeded more than once per year.

(A) Arithmetic Mean

(G) Geometric Mean

TABLE A-4 VERMONT AQCR AIR QUALITY STATUS, 1973 TSP[a]

AQCR Name	AQCR No.	No. Stations Reporting	TSP Concentration (μgm/m³)			Number of Stations Violating Ambient Air Quality Standards						% Reduction Required to Meet Standards[d]
			Highest Reading		2nd Highest Reading	Primary		Secondary				
			Annual	24-Hr	24-Hr	Annual	24-Hr[c]	Annual	%	24-Hr[c]	%	
Champlain Valley	159[b]											
Vermont Portion		4	102	212	181	1	0	2	50	3	75	+58
New York Portion		14	56	262	211	0	1	0	--	3	21	+34
Vermont (Remainder)	221	3	50	202	165	0	0	0	--	2	67	+11

[a] 1973 air quality data in National Air Data Bank as of July 28, 1974.

[b] Interstate

[c] Violations based on 2nd highest reading at any station

[d] Formula:

$$\left(\frac{\text{2nd Highest 24 Hr - 24-Hr Secondary Standard}}{\text{2nd Highest 24-Hr - Background}}\right) \times 100 \quad \left(\frac{\text{Annual - Annual Secondary Standard}}{\text{Annual - Background}}\right) \times 100$$

TABLE A-5 VERMONT AQCR AIR QUALITY STATUS, 1973 SO_2[a]

AQCR Name	AQCR No.	No. Stations 24-Hr	Reporting Cont.	SO_2 Concentration (μgm/m³) Highest Reading Annual	Highest Reading 24-Hr	2nd Highest Reading 24-Hr	Number of Stations Exceeding Ambient Air Quality Standards: Primary Annual	%	Primary 24-Hr[c]	%	Secondary 3-Hr[c]	%	% Reduction Required to Meet Standards[d]
Champlain Valley	159[b]												
Vermont Portion		2	2	NA	461[e]	453[e]	--	-	1	50	0	-	+19
New York Portion		2	1	35	208	96	0	-	0	--	0	-	f
Vermont (Remainder)	221	0	1	37	117	107	0	-	0	--	0	-	f

[a] 1973 air quality data in National Air Data Bank as of July 28, 1974.

[b] Interstate

[c] Violations based on 2nd highest reading at any station

[d] Formula:

$$\left(\frac{\text{2nd Highest 24-Hr - 24-Hr Standard}}{\text{2nd Highest 24-Hr}}\right) \times 100 \quad \left(\frac{\text{Annual - Annual Standard}}{\text{Annual}}\right) \times 100$$

[e] 1974 data from the State of Vermont

[f] No reduction required

TABLE A-6

VERMONT FUEL COMBUSTION SOURCE SUMMARY

AQCR Name	AQCR No.	Power Plants[a]	Other Fuel Combustion Point Sources[b]		Area Sources[c]	Total Emissions (10^3 Tons/Year)[d]		% Emissions From Vermont Fuel Combustion Sources	
			TSP	SO_2		TSP	SO_2	TSP	SO_2
Champlain Valley	159[e]	7	0[f]	5[f]	5	9.6[g]	16.5[g]	24	49[h]
Vermont (Remainder)	221	1	2[f]	9[f]	9	9.6	10.9	22	94

[a] Vermont power plants only

[b] Vermont industrial and commercial/institutional sources in addition to power plants

[c] Full counties, partial counties and towns, Vermont only

[d] AQCR total

[e] Interstate region

[f] All significant point sources, when combined with power plants, contribute less than 90% of the total emissions from fuel combustion point sources

[g] No data available for point sources within the New York portion of Champlain Valley (AQCR 159)

[h] 93% of these emissions are from Vermont fuel burning sources

TABLE A-7

VERMONT EMISSIONS SUMMARY, TSP

AQCR Name	AQCR No.	Total Tons/Year	Percent Fuel Combustion	Electricity Generation Point Sources		Other Point Source Fuel Combustion		Area Source Fuel Combustion	
				Tons/Year	%[b]	Tons/Year	%[b]	Tons/Year	%[b]
Champlain Valley	159	9,550[c]	39[c]	1147[c]	12[c]	331[c]	3	2,271	24
Vermont Portion		6,444	35[a]	1147	18[a]	331	5[a]	811	13[a]
N.Y. Portion		3,506[a]	42[a]	0[c]	--	0[c]	-	1,460	42[a]
Vermont (Remainder)	221	9,635	22	8	<1	1,070	11	1,010	10

[a] Percentage based only on the portion within the indicated state

[b] Percentage of total emissions

[c] No data available in NEDS for point sources contained in New York portion of Champlain Valley AQCR (159)

TABLE A-8

VERMONT EMISSIONS SUMMARY, SO_2

AQCR Name	AQCR No.	Total Tons/Year	Percent Fuel Combustion	Electricity Generation Point Sources		Other Point Source Fuel Combustion		Area Source Fuel Combustion	
				Tons/Year	%[b]	Tons/Year	%[b]	Tons/Year	%[b]
Champlain Valley	159	16,455[c]	93	69[c]	4	1,764[c]	11	12,791	78
Vermont Portion		8,632	93[a]	698	8[a]	1,764	20[a]	5,561	64[a]
N.Y. Portion		7,832[c]	92[a]	0[c]	-	0[c]	--	7,230	92[a]
Vermont (Remainder)	221	10,935	94	7	<1	3,702	34	6,509	60

[a] Percentage based only on the portion within the indicated state.

[b] Percentage of total emissions

[c] No data available in NEDS for point sources contained in New York portion of Champlain Valley AQCR (159)

TABLE A-9

VERMONT PARTICULATE EMISSION REGULATION
FOR FUEL COMBUSTION

Heat Input[a]	Maximum Allowable[b]	
	Existing	Proposed[d]
≤10	0.5	--
<300	As determined by Fig. A-1	--
>300	0.1	--
>1000[c]	0.02	0.06

[a] 10^6 BTU/hr

[b] lb/hr/10^6 BTU of heat input

[c] Applies to installations constructed after July 1, 1971

[d] Adopted by the State of Vermont, but not submitted to EPA for approval.

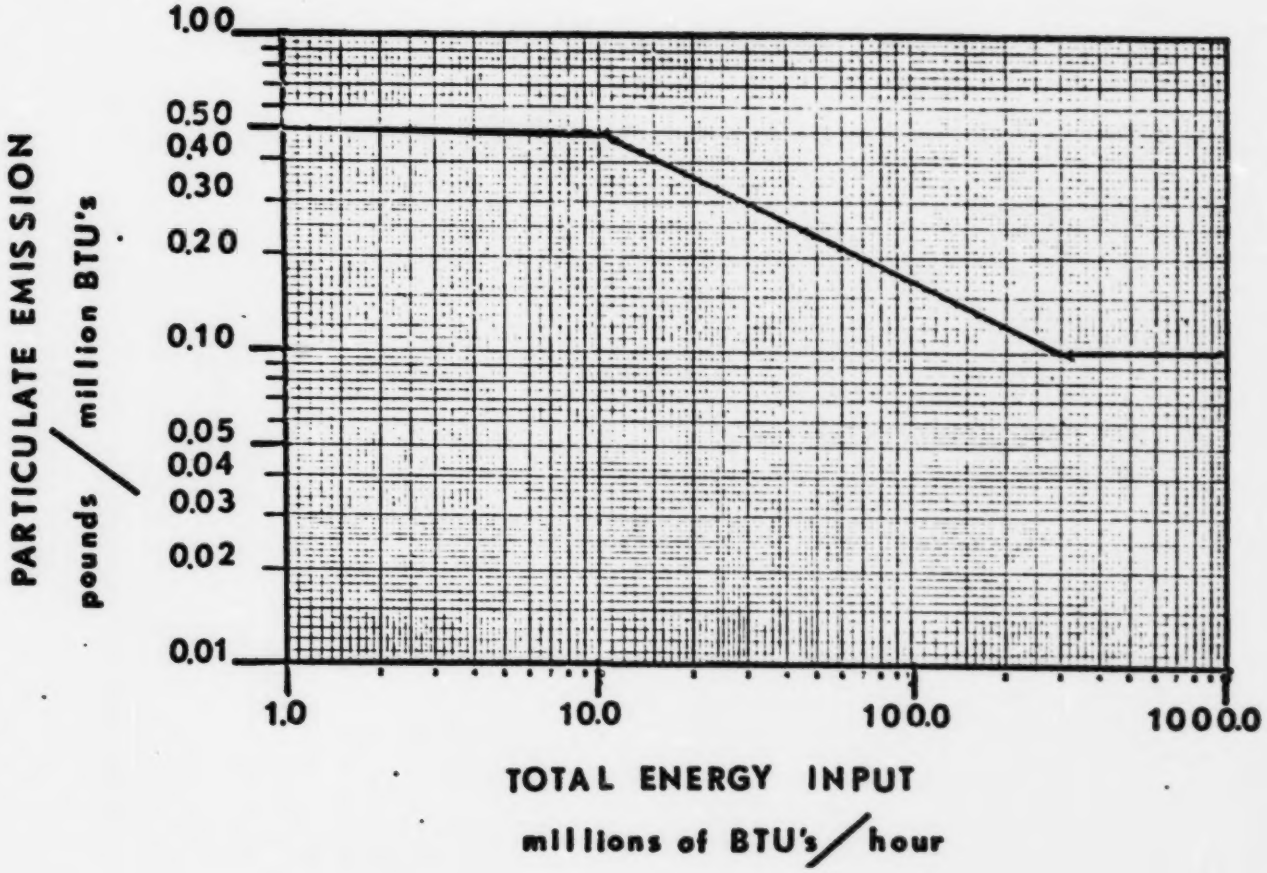

Figure A-1 FUEL BURNING EQUIPMENT

TABLE A-10

VERMONT SULFUR-IN-FUELS REGULATION

Sulfur Content (% by WT)	
Existing[a]	Proposed
1.0	1.5[b]
	2.5[c]

[a] Effective October 1, 1974

[b] Submitted to EPA for approval

[c] Use determined by unavailability of fuels of 1.5% sulfur, refer to proposed revisions to the State of Vermont Air Pollution Control Regulations, Section 5-221(C) of Chapter 5

APPENDIX B

REGIONAL AIR QUALITY SUMMARY

TABLE B-1

REGIONAL INDICATORS FOR REVISION OF TSP REGULATIONS

AQCR Name	AQCR No.	No. of Stations		Expected Attainment Date	Any Proposed AQMA Designations?	Total Emissions (10^3 Tons/Year)	% Emission From Vt. Fuel Combustion	Percent Tolerance For Emissions Increase
		Reporting	Violating Standards					
Champlain Valley	159[a]	18	3	7/75	No	9.6	24	-58
Vermont (Remainder)	221	3	1	7/75	No	9.6	22	- 4

[a] Interstate region

TABLE B-2

REGIONAL INDICATORS FOR REVISION OF SO_2 REGULATIONS

AQCR Name	AQCR No.	No. of Stations Reporting	No. of Stations Violating Standards	Expected Attainment Date	Any Proposed AQMA Designations?	Total Emissions (10^3 Tons/Year)	% Emission From Vt. Fuel Combustion	Percent Tolerance For Emissions Increase
Champlain Valley	159[a]	7	1	7/75	No	16.5	49	-19
Vermont (Remainder)	221	1	0	7/75	No	10.9	94	+241

[a] Interstate region

[b] Calculations based on readings occurring at Glens Falls, N.Y.

APPENDIX C

POWER PLANT SUMMARY

TABLE C-1

EXISTING VERMONT POWER PLANTS

AQCR Name	AQCR No.	Plant Name	1975 Capacity Mw[a]	Fuel Type	1972 Quantity[b]	% S by Regulation[c]	Boiler Also Designed For Coal
Champlain Valley	159	Burlington Elec. Lt. Dept. (Chitenden)	70	Coal	33,000	1.0	Yes
				Oil	1,713	1.0	No
				NG	591	1.0	Yes
		Milton Steam Plant (Chitenden)	4	Oil	697	1.0	No
		Grn. Mtn. Pwr-Essex #19 (Chitenden)	NA	Oil	296	1.0	No
		Grn. Mtn. Pwr-Colchester #16 (Chitenden)	NA	Oil	743	1.0	No
		Grn. Mtn. Pwr-Vergennes #9 (Addison)	NA	Oil	462	1.0	No
		St. Albans Diesel Plant (Franklin)	NA	Oil	148	1.0	No
		Rutland Gas Turbine[d] (Rutland)	NA	Oil	1,170	1.0	No
Vermont (Remainder)	221	Ascutney Gas Turbine (Windsor)	NA	Oil	929	1.0	No

[a] Source: Steam Electric Plant Factors, 1973 Edition, National Coal Assn., Washington, D.C.

[b] Coal in 10^3 tons, oil in 10^3 gal. NEDS data.

[c] Regulation approved by State, but still awaiting EPA approval.

[d] Gas turbine plant.

NA - Not Available

APPENDIX D

INDUSTRIAL, COMMERCIAL/INSTITUTIONAL SOURCE SUMMARY

TABLE D-1

VERMONT SIGNIFICANT SOURCES[a]

AQCR Name	AQCR No.	NEDS Emissions (T/yr)		Reduction Under Existing Regulations (T/yr)		% NEDS Particulate Emissions From Coal[b] (before regulations)
		Part.	SO_2	Part.	SO_2	
Champlain Valley	159	0	976	0	- 33	<1
Vermont (Remainder)	221	421	2296	+333	+326	33

[a] See Table A-6

[b] Only for significant sources not including power plants.

TABLE D-2

VERMONT SIGNIFICANT INDUSTRIAL AND COMMERCIAL/INSTITUTIONAL SOURCES

AQCR Name	AQCR No.	Particulate		SO_2	
		Plant Name	County	Plant Name	County
Champlain Valley	159			White Pigment Co.	Rutland
				Missisquoi SP Board Div.	Franklin
				Univ. of Vermont	Chitenden
				Medical Center, Mary Fletcher Unit	Chitenden
				Middleburg College	Addison
Vermont (Remainder)	221	Ethan Allen, Inc.	Essex	Pownal Tanning Co.	Bennington
				Rygate Paper Mill	Caledonia
				Whitefield Paper Co.	Essex
				Yankee Milk Co.	Orleans
				H.P. Hood & Co.	Orleans
				Norwich University	Washington
				Vermont State Hosp.	Washington
				Boise Cascade	Windham
				Goodyear Tire & Rubber	Windsor

APPENDIX E

FUEL USE SUMMARY

TABLE E-1

FUEL USE SUMMARY[a]

AQCR Name	Coal (10^3 Tons)		Oil (10^3 Barrels)		Gas (10^6 Cu.Ft.)	
	Anthracite	Bituminous	Residual	Distillate	Natural	Process
Champlain Valley						
Area Sources	19.8	3.0	695	5470	5940	0
Point Sources	0	33.5	309	204	1986	0
Total	19.8	36.5	1004	5674	7926	0
Vermont (Remainder)						
Area Sources	9430	3180	0	2685	2010	0
Point Sources	0	2075	602	218	0	0
Total	9430	5255	602	2903	2010	0

[a] Source: Stationary Source Fuel Summary Report NEDS. November 1972.